

Ashby (J. A.)

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T. A. ASHBY, M. D.,

LATE RESIDENT PHYSICIAN TO THE MARYLAND UNIVERSITY HOSPITAL,
PHYSICIAN TO THE NURSERY AND CHILD'S HOSPITAL
BALTIMORE; LECTURER ON OBSTETRICS
SUMMER COURSE UNIVERSITY
OF MARYLAND.

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ON SOME OF THE USES OF ANTISEPTICS IN OBSTETRICS AND GYNECOLOGY.

BY T. A. ASHBY, M. D., LATE RESIDENT PHYSICIAN TO THE MARYLAND
UNIVERSITY HOSPITAL; PHYSICIAN TO THE NURSERY AND
CHILD'S HOSPITAL, BALTIMORE; LECTURER ON OBSTETRICS,
SUMMER COURSE UNIVERSITY OF MARYLAND.

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When Mr. Lister first gave to science his splendid system of Antiseptic Surgery, his views were received by many members of the medical profession with that distrust and lack of confidence, which usually attend innovations upon well established principles.

There were to be found many surgeons who took issue with him, and who denied that the system presented possessed the virtues claimed for it.

The brilliant results secured by Mr. Lister and his followers, from the adoption of the antiseptic method of treating surgical wounds and accidents, have not been sufficient to dissolve away the prejudice or disbelief still prevalent to a wide extent. As an illustration of the views which are held by many surgeons upon this subject, I can not do better than quote the language of that

distinguished author and surgeon, Mr. Thomas Bryant. In his *Manual for the Practice of Surgery*, Mr. Bryant says. "As an observer who has no prejudice for or against the practice, I confess that I neither recognize the modesty of the assertion nor the true spirit of scientific surgery it breathes; I can see in it the spirit of the advocate and the enthusiast, but not the calm mind of the judicial surgeon." "The system may be good, and if so, will find its place in surgery but over confidence in its power will not help it. Like others it will have to be judged by the true spirit of scientific surgery and by that alone; but first let us have the facts."

These words express the views of many members of the profession, and it is evident from their meaning that antiseptic surgery has not yet received that full share of confidence its numerous friends anticipated for it. Whatever be its merits in general surgery it is not my purpose to discuss them in this paper. I shall confine my remarks entirely to the use of antiseptics in obstetrical and gynecological practice, and endeavor to point out the brilliant results which have followed upon its adoption in these departments of surgery. An inquiry into this subject will show, I think, that antiseptic surgery in these branches of our science has secured such results as to entitle Mr. Lister's system to the highest degree of praise.

The adoption of any system of practice by the profession should be regarded in the light of true fact, and should be based upon a most careful study of results. In our day when the tendency exists to so great an extent to deviate from well established principles into by-paths of speculation and theoretical deductions too much caution can not be observed in receiving the views or teachings of an earnest advocate.

Antiseptic surgery, no doubt, has breathed too much the spirit of the advocate and enthusiast. Too much may have been claimed for it by its originator and his followers. It may have transgressed the bounds of scientific surgery. Let us inquire into the facts and see some of the results attributed to antiseptics in obstetrical and gynecological practice. If the study of results entitle any system to consideration then by all means let judge-

ment be passed upon it, let it receive that attention its claims merit. It is only by the study of results that we are enabled to arrive at truth and to estimate the value of an agent or system of treatment.

During the past few years this subject of antiseptic surgery has received marked attention from obstetricians and gynecologists, and has been largely employed in their practice. Brilliant results have been brought forward, warm advocates have arisen, and the system has been pronounced a triumph of modern science. Whatever doubts have been thrown upon it in general surgery be it said, in all fairness, that to the use of antiseptics in practice the obstetrician and gynecologist are indebted for results which for brilliancy and importance have not been surpassed in any other department of medicine.

In reviewing the different operations in which this system has been employed, attention is first directed to the operation of ovariectomy; it is in this operation that the most marked results have been secured.

Up to within a very few years past ovariectomy was regarded as one of the most uncertain operations in all surgery, and was generally undertaken with grave forebodings of a serious result. The mortality in the operation was large and in the practice of the most skillful surgeons reached as high as 30 and 40 per cent. *Thus of 1408 cases, collected by Prof. S. D. Gross, of Philadelphia, in 1872, from various sources native and foreign 415 died, affording a mortality of 24 per cent., or one death in every three and two fifth cases.

In the practice of Dr. Washington L. Atlee, of Pennsylvania, who up to the time of his death had operated a greater number of times than any American surgeon, the mortality in 387 cases was about 30 per cent. Prof. T. Gaillard Thomas' 129 cases show 96 recoveries and 33 deaths. Dr. Dunlap, of Ohio has operated upon 143 patients, 112 recovered and 31 died.

Such were some of the results attending the operation of ovariectomy before the adoption of the antiseptic treatment. Com-

*McDowell oration, by S. D. Gross.

pare these results with those of more recent date, secured since the adoption of Mr. Lister's system. No where can more brilliant success be claimed than in Edinburgh, the home of the distinguished advocate. Mr. Thos. Keith, of Edinburgh, reports the most remarkable success yet achieved by any ovariologist; thus of 284 cases reported by him, there were only 35, or one death in eight operations. At another time he reports 158 cases, with 12 deaths; again 77 cases, with 13 deaths, and of the last 49 cases not one death, thus verifying his assertion that, "this long despised operation is now the safest of all the great surgical operations at least judging from these results." Mr. Keith does not hesitate to ascribe much of his wonderful success in his late cases to the use of antiseptics.

In the *British Medical Journal* dated October 19th, 1878, Mr. Keith has a paper upon the results of ovariectomy before and after antiseptics. Without antiseptics his results during 14 years gave a mortality of almost 1 in 7; of the five years preceding the use of the spray, nearly 1 in 10½; of the last of these five years 1 in 21. He has now done 49 operations as carefully as possible under the spray. Two of the first eight died, the rest—41 in number all recovered. After discussing the results obtained by other operators. Mr. Keith comes to the following conclusions: "What, then, have we gained by antiseptics in ovariectomy?"

I. It has lessened the mortality. Take the results of the German surgeons. After the first trials, even, the mortality fell at once from 50 per cent. to 20; 30 lives saved by the spray alone out of every hundred. When I add that my last forty-one have all recovered, enough has been said. No such successful series was ever got in the old way. Once Mr. Wells had twenty-seven successful operations in succession. But look at the wonderful list of 800 operations. How often did it happen that there was a run of deaths too many and occurring too often to be merely accidental, frequently four or five in succession, once seven, then ten out of twelve, etc. With antiseptics there will be no *per contra*, and such a run of deaths will come no more.

II. This increased safety will encourage medical men to recommend earlier operation, which certainly few of them do now."

Again he says, "with antiseptic ovariectomy the drainage-tube will not be nearly so often required. I do not think that it can be altogether dispensed with. No one has practiced drainage so much as I have, yet I know well that it sometimes cannot be used without risk." "Convalescence is rendered easier. Antiseptics are a great comfort and relief to the operator. Speaking for myself the difference is enormous; ovariectomy is not the operation it was 15 or 16 years ago, or even 2 years ago.

The best results in the old way were difficult to get, and no one knows, but he who has experienced it, the anxiety and weariness of spirit with which the struggle against the blood-poison was carried on in the early days of ovariectomy. It is something to think that no one will again have to suffer these experiences in the same degree, and it almost makes me envy the younger ovariectomists to whom the way in these days is made easy."

The results attending the operations of Mr. Spencer Wells are equally astonishing. In a letter to Prof. S. D. Gross, written in April last, Mr. Wells states, "I began the year 1878, with the 888th case, by adopting the antiseptic system of Lister, and have kept it up ever since the result of 45 cases being 40 recoveries and 5 deaths. The recoveries have taken place as a rule without fever. "I believe," he adds, "that the antiseptic system will certainly reduce mortality and reduce convalescence."

These results of Mr. Keith and Mr. Wells in Great Britain are confirmed by eminent ovariectomists on the continent and in our own country. Schroeder reports fifty ovariectomies, with forty-seven cures. All were done at the hospital, Lister's antiseptic method was invariably employed. In two of the successful cases, the patients were pregnant. Prof. Spiegelberg reports (*Berliner Klinische Wochenschrift* May 5th, 1879), the result of 35 hospital cases of ovariectomy performed according to Lister's antiseptic method in its fullest extent, with special reference to the question as to what treatment of the pedicle is most suitably combined with the antiseptic method. Of these 35 cases, only 5, or 14 per cent. died, whereas in 45 operations previously performed by him without the carbolic spray 20 patients or 45 per cent. died. In our own country similar results have been secured.

Prof. Wm. Goodell, of Philadelphia, than whom no more careful observer or authority exists in America, in a paper published in the October number of the *American Journal of Medical Science*, entitled Antiseptic Laparotomy calls attention to the use of Lister's treatment and reports a series of cases upon whom he had operated with the use of the carbolic spray. In these cases Prof. Goodell attributes marked results to the treatment employed. In concluding this paper he says, "while I do not advance my own limited experience, the wonderful results of English ovari-otomists and the improved statistics of continental surgeons prove to my mind that antiseptic ovariectomy has won the day and that he who does not resort to it withholds from his patients a great safeguard against the most common perils of this operation."

I might go on citing authorities in substantiation of the claims of antiseptics in ovariectomy but I have quoted enough to show what has been accomplished, both in Europe and America, by its adoption. I am free to admit that much of the success here attributed to the carbolic spray may have resulted in part from other conditions. Beyond question those who perform this operation have become skilled in its practice, which would in part account for better results, and again cases now are selected with greater care, the details of the operation and subsequent treatment are more thoroughly understood. Notwithstanding these facts much must be attributed to the carbolic spray and antiseptic cleanliness.

The indications for the use of antiseptics are not limited to the operation of ovariectomy, nor does this important and grave operation claim all of the merits pertaining to the system. There is a wide range for the employment of antiseptics in obstetrical and gynecological practice, and equally good results are to be secured from their adoption in other conditions.

In speaking of antiseptics I do not confine myself to the use of the carbolic spray or of carbolic acid, for they by no means represent the entire class of antiseptic agents. Carbolic acid has generally been regarded as the chief among antiseptics. Its virtues few will deny. It possesses properties which place it in

the lead of other equally useful agents and is preferred by Mr. Lister in his antiseptic spray and washes.

It will not be improper to assert that the employment of a special antiseptic is of minor consideration to the adoption of principles upon which, the application of all antiseptic agents should be based. One surgeon will prefer one antiseptic and another a different one. Each one will prove equally advantageous if judiciously employed.

The entire list of antiseptic agents may be resorted to in obstetrical or gynecological practice, each one meeting certain indications for treatment and each adapted to special conditions.

I take it that antiseptic surgery means not so much the carbolic spray or carbolic solutions as any antiseptic solution which will arrest putrefactive changes and destroy germs.

In obstetrics and gynecology the conditions in which putrefactive changes are met with are found to exist in a great number of cases. The puerperal state presents a variety of conditions which lead to septic absorption if not corrected by the proper employment of antiseptics. After childbirth the uterus and vagina present lesions of continuity through which septic matter brought into contact with them may be readily absorbed. The interior of the uterus has been barred at the placental site, its vessels are open and through this denuded surface septic matter may be readily introduced. Other sites of absorption are also to be found. How often do we meet with cases of lacerated cervix, abrasions or lacerations of the vagina, fourchette or perineum, retained portions of placenta, or blood clots left to undergo absorption or decomposition? In all such conditions we find the strongest indications for the use of antiseptics.

Dr. Matthews Duncan has said that "more pain is prevented, more life saved by antiseptic methods than by all the recent improvements of modern midwifery combined, and there is no prospect half so bright and encouraging as that held out by the general adoption of the antiseptic treatment of the parturient condition." This distinguished authority upon midwifery is so impressed by the results of this system that he urges its universal adoption in obstetric practice and recommends that all of the details of the

system be enforced. He advises the use of carbolic acid applied to the hand whenever it becomes necessary to introduce it within the vulva, vagina or uterus. He attributes many of the cases of puerperal septicæmia to the carelessness of the obstetrician in making digital examinations and carrying infection from case to case.

The most important indication for the employment of antiseptics is as a prophylaxis of septicæmia. Their timely and judicious employment arrests decomposition, destroys septic matter and removes the possibility of absorption by wounded tissues; they likewise purify and cleanse diseased surfaces, and induce healthy reparative action. After septic absorption has occurred antiseptics should be employed to wash out the uterine cavity and remove offensive discharges. Playfair recommends thorough disinfection by washing out the uterine cavity twice daily, by means of a Higginson's syringe with a long vaginal pipe attached. "The results," he states, "are sometimes very remarkable, the threatening symptoms rapidly disappearing, and the temperature and pulse falling so soon after the use of the antiseptic injections as to leave no doubt of the beneficial effects of the treatment."

Intra-uterine injections of antiseptic fluids act in a two fold manner. They not only arrest putrefactive changes and prevent absorption, but remove the offending matter from the uterus, and thereby induce a healthy reparative action. It is safe to say that in nine cases out of ten, septicæmia may be prevented by the timely use of this prophylaxis. I firmly believe if antiseptics were invariably employed in obstetrical practice that septicæmia, puerperal fever and, I might add, pelvic peritonitis and cellulitis would be rare complaints,

It is clearly proven, I think, that intra-uterine injections in the parturient woman are as harmless of evil, when cautiously administered, as they are powerful for good. Such injections should be given with the gentlest possible force sufficient to throw the fluid within the cavity of the uterus. Accidents do now and then occur, and cases of death are reported from their employment. The cause of such accidents may be looked for in the carelessness of the administration, such as undue force causing the

introduction of air or fluid into the uterine sinuses, or abdominal cavity.

Dr. J. R. Chadwick, of Boston, recommends the following method of intra-uterine injection which is safe, and its general adoption might prevent many of the accidents now reported: Dr. Chadwick says. "Injections into the vagina should be made with the patient lying upon her side until the fluid begins to ooze from the vulva, the patient is then gradually turned upon her face while the injection into the vagina is continued; by this plan the vagina is distended to its utmost, as in the knee and elbow position, while the uterus gravitates into the abdominal cavity and allows the fluid to flow through the patulous cervical canal into the cavity of the organ with the force of pneumatic pressure, any air thus forced into the vagina by the syringe will remain in the vagina, and thus the possible danger of its passage into the uterine sinuses be avoided."

Intra-uterine injections possess, to my mind, better promise of good results than any method of disinfection now employed. They are easy of administration, and can be employed for antiseptic purposes when it would be impossible to make applications in any other manner. Patients will seldom object to their use, and so soothing is their action upon wounded and inflamed tissues that they are generally eager for more than the first injection. The antiseptics to be used in intra-uterine injections must be determined by the physician. Carbolic acid is generally employed in a dilute form, but it is open to this one objection. It is liable to be absorbed from the uterine cavity, and produce poisoning, and even a fatal result, though cases of this character are fortunately rare. A solution of permanganate of potash makes a most excellent preparation for intra-uterine injection and possesses this great advantage over carbolic acid that it gives evidence by a change of color in the solution from a deep dark to a dirty yellow, so long as there is putrid matter brought in contact with it. Permanganate of potash is very convenient for use as crystals may be carried in the vest pocket, and a solution of any strength can be made within a very few moments. It has an astringent effect upon the denuded surfaces of the uterus or

vagina, and deprives them for a time of absorbent properties. A diluted solution of the liquor ferri subsulphatis makes a most excellent antiseptic and astringent wash, and is preferred by some authorities. The particular antiseptic employed is perhaps of less consequence than the thorough cleansing of the uterine cavity by a suitable fluid. To secure freedom from danger in the use of intra-uterine injections, the mouth and neck of the uterus should be well dilated to allow of the free escape of the fluid injected, and powerful astringents or antiseptics should not be employed unless sufficiently diluted to prevent an escharotic action. Again the use of such injections should not be entrusted to an inexperienced nurse, but should be administered by the physician.

I have referred to the employment of antiseptics as a prophylaxis of septic trouble and in the treatment of this condition when it exist. My remarks have been made with reference to septic absorption of an *autogenetic* character, that is to that class of cases in which the septic matter originates within the patient so that she infects herself. These sources of self infection are various, but I have referred to them in a brief manner. They may be defined as any condition giving rise to decomposition either of the tissues of the mother herself, of matters retained in the uterus or vagina that ought to have been expelled.

I now come to that class of cases in which the septic matter is conveyed from without and brought in contact with the wounded or denuded surfaces of the parturient female. To this form of septic trouble antiseptics are most admirably adapted, and to their employment must we date a diminution of such contagion. The manner of contagion in cases of puerperal septicaemia is as yet in dispute, and authorities are undecided as to whether actual contact of septic matter alone is required, or whether the elements of contagion are of a zymotic character specific in nature as in typhus, smallpox and other zymotic diseases. The weight of authority is, I think, strongly in support of the first assumption that actual contact of septic matter is the primary cause of puerperal septicaemia. Playfair (Page 572) says. "The assumption of a puerperal miasm is unnecessary. The more closely the history of these outbreaks in hospitals is studied the more apparent

does it become that they are not dependent on any miasm necessarily produced by the aggregation of puerperal patients but on the direct conveyance of septic matter from one patient to another." If we recognize the sources from which septic matter are conveyed from without it will not be difficult to trace the origin of *heterogenetic* infection in many of the cases which are met with in hospital or private practice. It is clearly shown that certain of the zymotic diseases may produce a form of disease identical in character to puerperal septicaemia; thus scarlatina, it is stated upon the testimony of Dr. Braxton Hicks, was the cause of puerperal disease in thirty-seven cases out of sixty-eight cases of this disease observed by him. Diphtheria is recognized as a rare cause. The same authority mentions one case in which the diphtheritic poison was traced, although none of the usual phenomena of the disease were present. Instances of the zymotic origin of puerperal fever are not common and it is not with this form of contagion that we are called upon to deal. Fortunately this cause of contagion is more easy of removal and is recognized with less difficulty than contagion induced by the actual contact of septic matter. The most careless practitioner would not fail to isolate a puerperal patient from one suffering from scarlet fever or diphtheria, yet the most cautious are, at times, guilty of indiscretion in attending confinement cases without exercising the most common rules of cleanliness and disinfection. It is against this system of practice that words of caution should be addressed. It would be safe to affirm that a majority of the cases of *heterogenetic* septicaemia are caused by the carelessness or indifference of medical practitioners, and it is to this class of men that antiseptic midwifery extends her warnings, and proffers her valuable services.

Antiseptic principles enforced by the weight of professional opinion will do away with a reckless and careless practice of midwifery. Let the profession once fully recognize the value of antiseptics as the preventives of septic contagion, enforce their adoption in obstetrical practice, and I feel assured the puerperal state will be relieved of many of the complications which now imperil and surround the lying-in-woman. Were I to define

a rule for the guidance of the obstetrician in every case of labor I would most unhesitatingly recommend the liberal and free use of antiseptics in every stage of labor. I would say begin disinfection before entering the confinement room, employ antiseptics in each and every examination, and continue them freely during the entire convalescence of the case. It is my firm conviction that to the adoption of this system of purification and cleanliness the future of the obstetric practice will owe its brightest and most permanent results.

In speaking of the treatment of puerperal disease, Leishman, (page 694) says, "It is impossible to exaggerate the importance in its bearing upon prophylaxis, of the strictest attention to cleanliness on the part of the practitioner, who in an ordinary case should wash his hands not only after but before each examination. Such a precaution would no doubt be scrupulously observed, had he just come from a case of scarlatina, or erysipelas, or from a post-mortem examination; but, the more completely the doctrine of septic infection is established, the more clearly does it appear that the great majority of cases of puerperal fever are preventable, and, if so, we may be sure that to act, in every case, as if we had special reason to fear that we might propagate the disease, is the surest way to reduce the risks to a minimum."

In speaking upon this subject elsewhere this same author says, "It is true that disease germs have never been seen or traced through the air; but practice founded on this belief has, in the hands of Lister and his pupils been attended with brilliant results. Is it too much to hope that one day, by a process of antiseptic delivery, the fearful danger of this poison may, even in hospital practice, be reduced within narrow bounds, to the benefit of humanity, and the lasting credit of modern science?"

I think I have pointed out a line of practice, supported by undeniable authority, which if duly considered and carefully inquired into, will lead to better results than have yet been known in obstetrical practice. I have not gone into this question of antiseptic midwifery as fully as should be done. It is a subject which opens up a wide field for study and original thought. As yet the germ theory of contagion is one of *theory*, rather than

of practical demonstration. We know that antiseptics modify or destroy the germs of contagion rather by clinical results than from actual proof based upon a true knowledge of such power.

Future investigations may show the true relation of antiseptics to the germ theory of contagion, and possibly will enlighten the present system of antiseptic practice. Until that period arrives principles of treatment must be more of an empirical character, and drawn from a practical study of results. If results of this character, are to be accepted, as we accept the action of other therapeutic agents, then I think it has been demonstrated that antiseptic midwifery has won the day, and is entitled to recognition and adoption by the profession.

